



The Relationship Between Staff Development and Health Instruction in Schools in the United States

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ABSTRACT

This analysis examined differences in health instruction among teachers of required health education classes or courses who had received or wanted staff development on health topics, teachers who had a degree in health education, and teachers who were Certified Health Education Specialists. Classroom-level data were collected from teachers of a nationally representative sample of randomly selected classes in public and private elementary schools and randomly selected required health education courses in public and private middle/junior and senior high schools. Health topics analyzed included tobacco, alcohol, and other drug use prevention; accident or injury prevention; violence prevention; HIV, sexually transmitted disease, and pregnancy prevention; nutrition and dietary behaviors; and physical activity and fitness. Participation in and desire for staff development on health topics were low. Staff development on health topics during the 2 years preceding the study was associated with teaching more health topics; for most topics at the upper grade levels, this association was independent of whether health education topics were within health infused classes or separate health education courses. At the upper grade levels, courses taught by teachers with degrees in health education were associated with teaching all health topics examined; however, for most topics, this finding was not significant when health infused versus separate health education courses were controlled.

Schools afford society the most efficient means of reaching the greatest number of young people for providing health instruction. In the United States more than 47 million elementary and secondary students attend approximately 93,000 public schools (U.S. Department of Education, 2002a; , 2002b). The aim of objective 7-2 of *Healthy People 2010* is to "increase the proportion of middle, junior high, and senior high

schools that provide school health education to prevent health problems in the following areas: unintentional injury; violence; suicide; tobacco use and addiction; alcohol and other drug use; unintended pregnancy, HIV/AIDS, and sexually transmitted disease infection; unhealthy dietary patterns; inadequate physical activity; and environmental health" (U.S. Department of Health and Human Services, 2000).

The extent to which students receive instruction in these areas, including instruction that emphasizes knowledge, skills, and positive attitudes toward healthy behaviors,

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may in part be a function of preservice and in-service teacher training. Good teaching requires teachers to acquire some level of expertise in the areas they teach. For example, Schempp, Manross, Tan, and Fincher (1998) found that teachers who taught subjects in which they had expertise, compared with teachers who had little or no expertise in that subject area, were better at recognizing problems in student learning, were more detailed and organized in their planning, were better able to accommodate a range of learners' skills and abilities, and were more comfortable and enthusiastic in their teaching. In other words, to teach well, one must know (Schempp et al., 1998).

In 2000 the Centers for Disease Control and Prevention (CDC) conducted the School Health Policies and Programs Study (SHPPS) 2000, the most comprehensive study of school health programs ever undertaken. The current analysis used SHPPS 2000 data to examine whether staff development, preservice training, and health education certification were associated with health instruction in tobacco use prevention; alcohol and other drug use prevention; injury and violence prevention; HIV, sexually transmitted disease, and pregnancy prevention; nutrition and dietary behaviors; and physical activity and fitness.

METHODS

SHPPS 2000 assessed eight components of the school health program: health education; physical education and activity; health services; mental health and social services; food service; school policy and environment; faculty and staff health promotion; and family and community involvement. These eight components were assessed in all 50 states, in a nationally representative sample of districts, and in a nationally representative sample of public and private schools at all school levels (elementary, middle/junior high, and senior high). In addition, health education as well as physical education and activity were assessed at the classroom level.

This report summarizes selected classroom-level data on health education only.

Classroom-level data were collected from teachers of randomly selected classes in public and private elementary schools and randomly selected required health education courses in public and private middle/junior and senior high schools. The CDC's Institutional Review Board determined SHPPS 2000 to be exempt from review.

Development of the SHPPS 2000 questionnaires took 2 years and included extensive literature reviews; expert panel meetings; reviews by representatives of federal agencies and national organizations; cognitive testing with school, district, and state education agency volunteers; and a formal field test of four questionnaires. In conjunction with the administration of SHPPS 2000, a substudy was designed and implemented to assess data quality. That substudy found that SHPPS 2000 data were generally of high quality. Among the classroom-level questions, the majority exhibited moderate or substantial reliability (Brener, Kann, & Smith, 2003).

Classroom-level data were collected using computer-assisted personal interviews. All interviews were completed between January and June 2000. Of the 1,706 classes or courses eligible for the health education classroom-level interview, 1,534 (90%) had a teacher complete the interview. A more detailed description of SHPPS 2000 methodology can be found elsewhere (Smith et al., 2001).

In this study, classes and required courses were sampled, not teachers. Teachers of randomly selected classes in elementary schools and randomly selected required health education courses in middle/junior and senior high schools were interviewed as a means of assigning characteristics to each randomly selected class or course. Thus, results are generalizable to classes and required courses not to teachers. For simplicity, however, rather than referring to classes or courses with teachers who possess certain characteristics, we report results in terms of teachers' characteristics. For example, when we report that 47.4% of teachers at the middle/junior and senior high school levels received staff development in

violence prevention, this means that 47.4% of required health education courses had a teacher who received staff development on this topic.

All analyses used SUDAAN (Shah, Barnwell, & Bieler, 1997) to account for the complex sample design used in SHPPS 2000, and results were based on weighted data. Logistic regression was used to examine differences in health instruction among teachers who had received staff development during the 2 years preceding the study on a particular health topic versus those who had not, teachers who had a degree in health education versus those who did not, and teachers who were Certified Health Education Specialists versus those who were not. The significance level was set at $p < .05$.

At the middle and junior/senior high school levels, both adjusted and unadjusted models were run for health infused instruction. Health infused courses were operationally defined as required courses that included instruction on health topics but were primarily devoted to other subjects such as science or social studies. In comparison, separate health education courses included instruction almost exclusively on health topics. This strategy was used because separate health education courses are more likely than health infused courses to include health topics (Kann, Brener, & Allensworth, 2001). Furthermore, among courses taught by teachers with health education degrees, 92% of the courses were separate health education courses and 8% were health infused courses. Similarly, among courses taught by Certified Health Education Specialists, 85% of the courses were separate health education courses and 15% were health infused courses.

Staff development included workshops, conferences, continuing education, graduate courses, and any other kind of in-service instruction provided during the 2 years preceding the study. A degree in health education was defined as having an undergraduate major or minor or a graduate degree in health education or in both health education and physical education. Few elementary teachers had a degree in



health education (6.9%) or were Certified Health Education Specialists (2.8%) (this finding was expected, however, given the multidisciplinary nature of elementary school teaching). Consequently, the associations between these two variables (i.e., a health education degree and Certified Health Education Specialists) and health education teaching were not examined at the elementary school level.

Health topics analyzed in this study included tobacco use prevention; alcohol and other drug use prevention; injury and violence prevention; HIV, sexually transmitted disease, and pregnancy prevention; nutrition and dietary behaviors; and physical activity and fitness. Teachers were asked whether they taught each topic and, if so, the number of hours they taught the topic in their class or course. In addition, teachers were asked whether they used the following teaching techniques when teaching health topics (this question was asked regarding health topics generally, not for each health topic examined in the current analysis): group discussion; cooperative group activities; role play, simulations, or practice; visual, performing, or language arts; pledges or contracts for behavior change; guest speakers; peer teaching; the Internet; or computer-assisted instruction.

RESULTS

Violence prevention was the topic in which the highest percentage of teachers reported receiving staff development during the 2 years preceding the study (49.4% at the elementary school level and 47.4% at the middle/junior and senior high school levels; Table 1). For most other topics, approximately one-third or fewer teachers reported receiving staff development on those topics. For most health topics less than one-fourth of teachers wanted to receive staff development on those topics.

At the elementary school level, teachers who had received staff development in tobacco use prevention; violence prevention; HIV, sexually transmitted disease, and pregnancy prevention; and nutrition and dietary behaviors were significantly more likely to

Table 1. Required Health Education Classes or Courses with Teachers Who Received or Wanted Staff Development on Health Education Topics, by Grade Level—School Health Policies and Program Study, 2000

Topic	Class or Course with Teachers Who Received Staff Development ^A (%)	Class or Course with Teachers Who Wanted Staff Development (%)
Tobacco use prevention		
Elementary	22.0	13.5
Middle/junior and senior	34.2	18.5
Alcohol and other drug use prevention		
Elementary	24.6	15.9
Middle/junior and senior	40.7	22.6
Accident or injury prevention		
Elementary	22.9	14.8
Middle/junior and senior	31.2	11.4
Violence prevention		
Elementary	49.4	38.9
Middle/junior and senior	47.4	35.0
HIV prevention		
Elementary	31.8	13.5
Middle/junior and senior	43.8	26.4
Sexually transmitted disease prevention		
Elementary	13.6	7.6
Middle/junior and senior	35.5	21.9
Pregnancy prevention		
Elementary	7.0	6.3
Middle/junior and senior	26.2	19.7
Nutrition and dietary behaviors		
Elementary	23.8	28.8
Middle/junior and senior	32.1	24.9
Physical activity and fitness		
Elementary	18.2	20.5
Middle/junior and senior	32.4	20.5

^ADuring the 2 years preceding the study.

have included instruction on those health topics than teachers who had not received recent topic-specific staff development (Table 2). Furthermore, teachers who reported receiving staff development in tobacco use prevention or violence prevention were significantly more likely to spend 4 or more hours teaching that topic than

teachers who had not received recent staff development on the topic.

At the middle/junior and senior high school levels, teachers who received staff development were significantly more likely to include instruction on each of the health topics than were teachers who had not received recent topic-specific staff



Table 2. Elementary School Classes with Teachers Who Taught Health Education Topics and Taught 4 or More Hours of Topic, by Staff Development^A—School Health Policies and Program Study, 2000

Topic	Taught Topic		4 Hours of Instruction on Topic ^B	
	(%)	OR (95% CI) ^C	(%)	OR (95% CI)
Tobacco use prevention				
Staff development	84.6	2.0 (1.1, 4.0)*	53.4	1.9 (1.1, 3.4)*
No staff development	72.9	1.0	37.4	1.0
Alcohol and other drug use prevention				
Staff development	75.6	1.2 (0.6, 2.2)	53.0	1.4 (0.9, 2.3)
No staff development	72.8	1.0	44.3	1.0
Accident or injury prevention				
Staff development	77.7	1.3 (0.7, 2.3)	66.6	1.3 (0.7, 2.4)
No staff development	73.4	1.0	60.8	1.0
Violence prevention				
Staff development	87.9	2.8 (1.6, 5.1)*	73.9	1.9 (1.2, 3.2)*
No staff development	71.9	1.0	59.4	1.0
HIV prevention				
Staff development	38.0	3.0 (1.7, 5.1)*	25.6	1.9 (0.7, 5.3)
No staff development	17.2	1.0	15.3	1.0
Sexually transmitted disease prevention ^D				
Staff development	13.2	3.0 (1.2, 7.5)*	42.8	3.4 (0.5, 24.4)
No staff development	4.8	1.0	18.1	1.0
Pregnancy prevention				
Staff development	21.6	11.7 (3.8, 35.4)*	51.9	na
No staff development	2.3	1.0	9.1	na
Nutrition and dietary behaviors				
Staff development	94.8	2.3 (1.02, 5.3)*	71.0	1.1 (0.6, 2.0)
No staff development	88.6	1.0	68.9	1.0
Physical activity and fitness ^E				
Staff development	76.1	1.7 (0.9, 3.2)	36.4	0.8 (0.4, 1.5)
No staff development	65.0	1.0	40.9	1.0

Note: na = not available (too few teachers taught this topic to run the logistic regression model).

* $p < .05$.

^AReceived staff development during the 2 years preceding the study.

^BAmong classes with teachers who taught the topic.

^COdds ratio and 95% confidence interval (CI).

^DNot including HIV.

^EClassroom instruction, not a physical activity period.

development (Table 3). For all topics other than tobacco use prevention, alcohol and other drug use prevention, and physical activity and fitness, this finding was consistent when controlling for health infused versus separate health education course in-

struction. Teachers who reported receiving staff development in HIV prevention, pregnancy prevention, or nutrition and dietary behaviors were significantly more likely to spend 4 or more hours teaching those topics than were teachers who had not received

recent staff development on the topics. When controlling for health infused versus separate health education course instruction, this relationship was not evident for physical activity and fitness.

Approximately one-third (34.3%) of

Table 3. Required Middle/Junior and Senior High School Health Education Courses with Teachers Who Taught Health Education Topics and Taught 4 or More Hours of Topic, by Staff Development—School Health Policies and Program Study, 2000

Topic	(%)	Taught Topic		4 Hours of Instruction on the Topic ^A		
		Unadjusted OR (95% CI) ^B	Adjusted OR (95% CI) ^C	(%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Tobacco use prevention						
Staff development	75.3	2.1 (1.4, 3.2)*	1.5 (0.9, 2.4)	62.0	1.4 (0.9, 2.4)	1.3 (0.8, 2.2)
No staff development	59.3	1.0	1.0	53.2	1.0	1.0
Alcohol and other drug use prevention						
Staff development	76.6	2.1 (1.3, 3.2)*	1.5 (0.9, 2.4)	69.5	1.6 (0.98, 2.7)	1.4 (0.8, 2.3)
No staff development	61.1	1.0	1.0	58.4	1.0	1.0
Accident or injury prevention						
Staff development	56.3	2.1 (1.4, 3.3)*	2.2 (1.4, 3.4)*	60.3	1.4 (0.7, 2.5)	1.4 (0.7, 2.6)
No staff development	37.6	1.0	1.0	52.8	1.0	1.0
Violence prevention						
Staff development	61.7	2.3 (1.7, 3.2)*	2.2 (1.6, 3.1)*	58.2	1.4 (0.8, 2.4)	1.3 (0.7, 2.3)
No staff development	41.3	1.0	1.0	50.1	1.0	1.0
HIV prevention						
Staff development	64.7	1.9 (1.3, 2.9)*	1.6 (1.1, 2.5)*	40.9	2.2 (1.3, 3.7)*	2.2 (1.3, 3.6)*
No staff development	48.7	1.0	1.0	24.0	1.0	1.0
Sexually transmitted disease prevention ^D						
Staff development	62.2	2.6 (1.8, 3.8)*	2.2 (1.5, 3.1)*	30.9	1.2 (0.7, 2.0)	1.1 (0.7, 1.9)
No staff development	38.5	1.0	1.0	27.6	1.0	1.0
Pregnancy prevention						
Staff development	56.7	2.6 (1.7, 3.9)*	2.1 (1.4, 3.1)*	40.2	1.7 (1.01, 2.9)*	2.1 (1.3, 3.3)*
No staff development	33.5	1.0	1.0	28.0	1.0	1.0
Nutrition and dietary behaviors						
Staff development	77.2	2.3 (1.6, 3.3)*	2.2 (1.5, 3.3)*	68.9	1.8 (1.1, 2.9)*	1.8 (1.1, 2.9)*
No staff development	59.0	1.0	1.0	55.3	1.0	1.0
Physical activity and fitness ^E						
Staff development	63.6	2.1 (1.4, 3.2)*	1.4 (0.96, 2.2)	61.6	1.8 (1.1, 3.1)*	1.6 (0.9, 2.7)
No staff development	45.5	1.0	1.0	46.7	1.0	1.0

Note: Staff development—received staff development during the 2 years preceding the study.

* $p<.05$.

^AAmong classes with teachers who taught the topic.

^BOdds ratio and 95% confidence interval (CI).

^CAdjusted for whether health topics were taught in a separate health education course versus a health infused course (i.e., a course devoted primarily to other subjects, such as science or social studies).

^DNot including HIV.

^EClassroom instruction, not a physical activity period.

middle/junior and senior high school health education teachers had degrees in health education, and 8.8% were Certified Health Education Specialists. Teachers who had

degrees in health education were significantly more likely than teachers who did not (controlling for health infused versus separate health education course instruc-

tion) to teach about accident or injury prevention, HIV prevention, and sexually transmitted disease prevention (Table 4). Likewise, teachers who were Certified



Table 4. Required Middle/Junior and Senior High School Health Education Courses with Teachers Who Taught Health Education Topics, by Health Education Degree and Certified Health Education Specialist (CHES) Status—School Health Policies and Program Study, 2000

Taught Topic						
Topic	Unadjusted (%)	Adjusted OR (95% CI) ^A	Topic	Unadjusted (%)	Adjusted OR (95% CI) ^A	Adjusted OR (95% CI) ^B
Tobacco use prevention			Sexually transmitted disease prevention ^C			
Degree in health ed.	76.8	2.5 (1.7, 3.7)*	Degree in health ed.	63.0	2.7 (1.8, 3.9)*	1.8 (1.2, 2.9)*
No degree in health ed.	57.0	1.0	No degree in health ed.	38.9	1.0	1.0
CHES – yes	74.8	1.7 (0.9, 3.4)	CHES – yes	67.2	2.5 (1.5, 4.1)*	1.9 (1.1, 3.4)*
CHES – no	63.5	1.0	CHES – no	44.9	1.0	1.0
Alcohol and other drug use prevention			Pregnancy prevention			
Degree in health ed.	80.3	2.7 (1.8, 4.2)*	Degree in health ed.	51.7	2.1 (1.4, 3.1)*	1.4 (0.8, 2.2)
No degree in health ed.	59.9	1.0	No degree in health ed.	34.2	1.0	1.0
CHES – yes	74.0	1.4 (0.7, 2.8)	CHES – yes	57.5	2.2 (1.3, 3.9)*	1.8 (0.96, 3.3)
CHES – no	66.9	1.0	CHES – no	37.7	1.0	1.0
Accident or injury prevention			Nutrition and dietary behaviors			
Degree in health ed.	58.5	2.7 (1.9, 3.9)*	Degree in health ed.	70.4	1.5 (1.02, 2.2)*	0.8 (0.5, 1.3)
No degree in health ed.	34.2	1.0	No degree in health ed.	61.3	1.0	1.0
CHES – yes	53.3	1.5 (0.9, 2.7)	CHES – yes	74.3	1.6 (0.8, 3.2)	1.2 (0.6, 2.4)
CHES – no	42.6	1.0	CHES – no	63.7	1.0	1.0
Violence prevention			Physical activity and fitness ^D			
Degree in health ed.	58.1	1.6 (1.1, 2.3)*	Degree in health ed.	63.5	2.3 (1.5, 3.3)*	0.9 (0.6, 1.5)
No degree in health ed.	47.0	1.0	No degree in health ed.	43.6	1.0	1.0
CHES – yes	57.2	1.3 (0.7, 2.4)	CHES – yes	64.6	1.8 (0.99, 3.4)	1.1 (0.5, 2.2)
CHES – no	50.1	1.0	CHES – no	50.1	1.0	1.0
HIV prevention			Note: Health education degree includes undergraduate major or minor, or graduate degree, in health education or health education and physical education.			
Degree in health ed.	70.9	2.6 (1.7, 3.9)*	* <i>p</i> <.05.			
No degree in health ed.	48.8	1.0	^A Odds ratio and 95% confidence interval (CI).			
CHES – yes	74.9	2.6 (1.4, 4.6)*	^B Adjusted for whether health topics were taught in a health education course versus infused course (courses devoted primarily to other subjects, such as science or social studies).			
CHES – no	53.8	1.0	^C Not including HIV.			
			^D Classroom instruction, not a physical activity period.			

Health Education Specialists were significantly more likely than teachers who were not Certified Health Education Specialists (controlling for health infused versus separate health education course instruction) to teach about both HIV and sexually transmitted disease prevention.

Except for the use of one specific teaching method, when controlling for health

infused versus separate health education course instruction, methods of instruction used for teaching health topics did not vary by either degree or certification status of the teacher (Table 5). Teachers with health education degrees were significantly more likely to use the Internet when teaching about health topics than teachers who did not have health education degrees.

DISCUSSION

Professional preparation, as both preservice and in-service training, is a critical factor in ensuring quality school health education (Donnelly, Helion, & Fry, 1999; Lia-Hoagberg, Nelson, & Chase, 1997; Perry-Casler, Price, Telljohann, & Chesney, 1997; Schempp et al., 1998). Consequently, school health guidelines developed by CDC



Table 5. Required Middle/Junior and Senior High School Health Education Courses with Teachers Who Used Various Teaching Methods When Teaching Health Topics, by Health Education Degree and Certified Health Education Specialist (CHES) Status—School Health Policies and Program Study, 2000

Method	Used Teaching Method	Used Teaching Method							
		Unadjusted (%)	Unadjusted OR (95% CI) ^A	Adjusted (%)	Adjusted OR (95% CI) ^B	Method	Unadjusted (%)	Adjusted OR (95% CI) ^B	
Group discussion									
Degree in health ed.	96.7	2.4 (1.2, 5.0)*	1.0 (0.3, 2.9)			No degree in health ed.	42.2	1.0	1.0
No degree in health ed.	92.2		1.0	1.0		CHES – yes	66.6	2.2 (1.1, 4.3)*	1.6 (0.8, 3.2)
CHES – yes	97.9	3.2 (0.6, 18.3)	1.9 (0.3, 11.5)			CHES – no	47.3	1.0	1.0
CHES – no	93.6		1.0	1.0		Peer teaching			
Cooperative group activities									
Degree in health ed.	85.9	1.4 (0.9, 2.3)	0.7 (0.4, 1.2)			Degree in health ed.	55.9	2.2 (1.4, 3.2)*	1.3 (0.8, 2.2)
No degree in health ed.	81.3		1.0	1.0		No degree in health ed.	36.9	1.0	1.0
CHES – yes	85.7	1.2 (0.6, 2.6)	0.9 (0.4, 1.9)			CHES – yes	57.6	1.9 (0.98, 3.7)	1.4 (0.7, 2.8)
CHES – no	83.0		1.0	1.0		CHES – no	41.7	1.0	1.0
Role play, simulation, or practice									
Degree in health ed.	59.9	1.3 (0.9, 2.0)	0.9 (0.6, 1.4)			No degree in health ed.	45.3	1.5 (1.02, 2.2)*	1.6 (1.01, 2.4)*
No degree in health ed.	53.0		1.0	1.0		CHES – yes	35.5	1.0	1.0
CHES – yes	66.1	1.6 (0.9, 2.8)	1.3 (0.7, 2.3)			CHES – no	49.7	1.6 (0.95, 2.8)	1.6 (0.9, 2.7)
CHES – no	55.0		1.0	1.0			37.8	1.0	1.0
Visual, performing, or language arts									
Degree in health ed.	68.4	1.4 (0.9, 2.1)	0.8 (0.5, 1.2)			Computer-assisted instruction			
No degree in health ed.	61.2		1.0	1.0		Degree in health ed.	30.6	1.4 (0.8, 2.2)	1.6 (0.9, 2.7)
CHES – yes	80.1	2.5 (1.3, 4.7)*	2.0 (0.98, 4.0)			No degree in health ed.	24.6	1.0	1.0
CHES – no	61.9		1.0	1.0		CHES – yes	37.2	1.7 (0.8, 3.4)	1.7 (0.8, 3.5)
Pledges or contracts for behavior									
Degree in health ed.	25.7	1.7 (1.02, 2.8)*	1.5 (0.8, 2.6)			CHES – no	26.3	1.0	1.0
No degree in health ed.	17.0		1.0	1.0		Note: Health education degree includes undergraduate major or minor, or graduate degree, in health education or health education and physical education.			
CHES – yes	26.0	1.4 (0.7, 2.9)	1.2 (0.5, 2.6)			*p<.05.			
CHES – no	20.5		1.0	1.0		^AOdds ratio and 95% confidence interval.			
Guest speakers									
Degree in health ed.	62.6	2.3 (1.5, 3.4)*	1.3 (0.8, 2.1)			^BAdjusted for whether health topics were taught in a health education course versus infused course (courses devoted primarily to other subjects, such as science or social studies).			

on lifelong healthy eating (CDC, 1996), lifelong physical activity (CDC, 1997), tobacco use prevention (CDC, 1994), AIDS (CDC, 1988), and unintentional injuries and violence (CDC, 2001) specifically recommend staff training to promote effective teaching of these topics. The findings in this study are consistent with other studies that suggest staff knowledge and professional de-

velopment programs increase and improve instruction (Donnelly et al., 1999; Lia-Hoagberg et al., 1997; Perry-Casler et al., 1997; Schempp et al., 1998). For example, staff development during the 2 years preceding this study was associated with teaching health topics linked to the leading causes of morbidity and mortality among young people and adults; for most topics at the

upper grade levels, this association was independent of whether health education topics were within a health infused course or within a separate health education course.

Professional preparation and practice are two important factors that “present a significant challenge to the implementation and effectiveness of comprehensive school health education.” (Patterson, Cinelli,



Sankaran, Brey, & Nye, 1996, p.13)

This study found that fewer than half of elementary, middle/junior, and senior high school teachers reported receiving recent staff development, and even fewer teachers wanted to receive staff development. At the middle/junior and senior high school levels only about one-third of teachers had health education degrees and fewer than 1 in 10 teachers were Certified Health Education Specialists.

One limitation of SHPPS 2000 is that it did not examine in detail the reasons why teachers had not participated in staff development, nor did it examine in detail why teachers who reported not wanting staff development had this lack of interest. For example, it is possible that some teachers were not offered staff development on the topics examined in this study, release time to attend staff development, or substitutes to cover classes while they attended trainings. Conversely, it is possible that some teachers did not recognize the importance of a particular health topic, thought that they did not need additional development on a particular topic, believed that they did not have enough class time to allocate to a particular health topic, or thought that students were receiving that particular health instruction elsewhere (e.g., in another class or in a different grade). Some teachers also may have believed that the staff development options available to them would be ineffective. For example, according to King and Newmann (2000) professional development is often ineffective because it does not appropriately account for the way in which teachers learn and how schools as organizations affect both learning and practice among teachers.

In addition, it cannot be determined from this cross-sectional study whether staff development caused teachers to teach the health education topics or whether teachers who would be most likely to teach the topics anyway sought staff development opportunities. Either way, the results of this study suggest that finding ways to make staff development more appealing and available to teachers is important. Elementary,

middle/junior, and senior high school teachers who received recent staff development were not only more likely to teach health topics, but also were more likely, for some topics, to spend more hours of instruction on the topic in which the teacher received staff development.

The results of this study also demonstrate the importance of preservice training in health education among teachers of health topics. Middle/junior and senior high school teachers with health education degrees were significantly more likely to offer instruction on all health topics than teachers who did not have health education degrees. After controlling for whether the health instruction was within a health infused versus separate health education course, this study still found that accident or injury prevention, HIV prevention, and sexually transmitted disease prevention were taught more often by teachers with health education degrees. These findings are consistent with previous findings from SHPPS 2000 that found health topics were taught more frequently in health education courses than in infused courses (Kann et al., 2001). A qualitative analysis of the 1994 School Health Policies and Programs Study school and classroom level respondents in middle/junior and senior high schools found strong support for hiring teachers with professional preparation in health education to teach health education courses (Patterson, Grunbaum, & Kann, 1999). Teachers whose training was outside the area of health education "clearly wished to assign health teaching to qualified health educators" and expressed a desire for professional development opportunities (Pateman et al., 1999, p.260).

CONCLUSION

Health education courses that address health topics associated with the leading causes of morbidity and mortality are an important means of improving the health and learning of youth. This study found that preservice training and staff development were associated with increased teaching of important health education topics. How-

ever, more research is needed to identify why so few teachers sought or received staff development. If staff development were consistently designed to encourage teachers to attend and to effectively improve teacher knowledge and skills, the quantity and quality of health education in schools could potentially increase.

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